CLAIMS

I claim:

1. A surface scanned by an optical sensor of a relative position determinator, for use with a light source, comprising:

first regions that reflect light beams from the light source toward the optical sensor, in the form of reflected light beams; and

second regions that reflect light from the light source away from the optical sensor, in the form of deflected light beams, the reflected light beams and the deflected light beams together forming an image used by the relative position determinator to detect change in the position of the optical sensor relative to the surface.

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2. The surface as in claim 1, wherein the first regions are specular.

3. The surface as in claim 2, wherein the second regions are specular.

4. The surface as in claim 3, wherein the first regions are selected from a group consisting of surfaces containing depressions, surface protrusions, and a combination of surfaces containing depressions and surface protrusions.

5. The surface as in claim 4, wherein the first regions are rotationally symmetric.

6. The surface as in claim 5, wherein the first regions are sized to be detectable by the optical sensor.

7. The surface as in claim 6, wherein the second regions surround the first regions.

8. The surface as in claim 7, wherein the surface is covered with an optically transparent coating.

9. A surface scanned by an optical sensor of a relative position determinator, for use with a light source, comprising:

regions of a first reflectance that reflect light beams from the light source in the form of a first set of reflected light beams; and

regions of a second reflectance, less reflective than the regions of the first reflectance, that reflect light beams from the light source in the form of a second set of reflected light beams, the first set of reflected light beams and the second set of reflected light beams together forming an image used by the relative position determinator to detect change in the position of the optical sensor relative to the surface.

10. The surface as in claim 9, wherein the regions of the first reflectance are a first color, and the regions of the second reflectance are a second color, darker than the first color.

11. The surface as in claim 10, wherein the regions of the first color are high-reflectance, and the regions of the second color are low-reflectance.

12. The surface as in claim 11, wherein the regions of the first color are sized to be detectable by the optical sensor.

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13. A method for determining the position of an optical sensor relative to a surface, wherein the optical sensor is part of a relative position determinator, to be used with a light source that illuminates the surface, comprising the steps of:

shining light from the light source onto the surface;

reflecting light from a first group of regions on the surface toward the optical sensor, in the form of reflected light beams;

reflecting light from a second group of regions on the surface away from the optical sensor, in the form of deflected light beams;

forming an image with the reflected and deflected light beams, the image used by the relative position determinator to detect change in the position of the optical sensor relative to the surface.

14. The method of claim 13, wherein the first group of regions is specular.

15. The method of claim 14, wherein the second group of regions is specular.

16. The method of claim 15, wherein the first group of regions is made up of rotationally symmetric elements.

17. The method of claim 16, wherein the surface is covered with an optically transparent coating.

18. The method of claim 17, wherein the first group of regions is made up of surfaces containing depressions.

19. The method of claim 18, wherein the first group of regions is made up of surfaces containing protrusions.